

Manjarpada 2- Irrigation Boost for NE Nasik District

Dr. C. M. Nikam,

Head, PG Dept. of Geography, M.S.G. College, Malegaon Camp,

Dist. Nashik, Maharashtra (India)

ABSTRACT

Water is the fundamental need for the Socio-economic development of any region. In recent years, Maharashtra State (India) is facing the problem of regional disparity because of spatial and temporal variability in rainfall and lack of proper utilization of running water slope of Western part of the Sahyadri is very steep, receives excess amount of rainfall and adds wasteful into Arabian Sea. Par River (2000 to 3000 mm Avg. Annual Rainfall) originates from Kame hills of Sahyadri ranges. The river flows further west towards Gujarat State (India) and adds wasteful water into Arabian Sea. Par river basin experience water scarcity in summer in contrast overflow discharge in rainy season. The undulating topography limits the local irrigation.

In contrast, eastern part of the Sahyadri (Girna river valley) is the rainshadow zone receiving very low rainfall (1500-2000 mm Avg. Annual Rainfall). Therefore this region always experiences scarcity of water.

Circulation of water is possible at two levels for sustainable development of any region. In intra-basin circulation of running water, circulation is possible within a basin itself (Punad Project). Whereas in inter-basin circulation of running water; circulation is possible from one basin to another. An attempt has been made in the paper to study and suggest the proper utilization of water in the study area possible by inter-basin circulation of water from Par to Girna basin.

Key words: Water Discharge, Sustainable Development, Intra, Inter-basin circulation, Water Scarcity.

INTRODUCTION:

Day by day the problems of droughts and water shortage are continuously increasing on the global and the local perspectives. Today, in many countries, the use of water is curtailed. Man is solely responsible for this condition. If the seriousness is neglected and solutions are not found out, man would be responsible for the consequences. Negligent attitude and lack of planning in India and Maharashtra will cause serious conditions. In the second World Earth Conference at Johannesburg everybody worried about unavailability of pure water. Everybody was firm on to minimize the utility of water to its half up to 2015. The Report of UNISEF alarmed the frightful conditions of drinking water in India in near future. The World Bank also predicted water as the cause of Third World War. The World Watch Institute had already signaled on the water issue. This brings in forth the explosive nature of water problem in India. This year at the very onset of monsoon drought conditions are experienced. In 8 to 10 states including Maharashtra droughts had already been declared.

Water shortage is more in Maharashtra when compared with other states in India. 88% land is non-irrigated. About half of the region of the State is under the influence of drought. The region of crop has been increasing but the productivity of the land is reduced. The production has continuously been deteriorating.

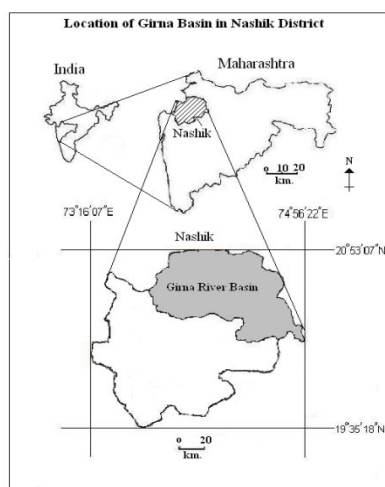
In all 380 rivers are flowing in Maharashtra. Their total length is about 20,000 Km. in overall geographical region distributed among the basins of Godavari, Krishna, Tapti and Narmada rivers. Besides, there are 22 narrow basins of west flowing rivers. 42% water from the overall available water in

Maharashtra is from western flowing rivers (Konkan). Among all major basins only western flowing rivers having excess availability of water.

STUDY AREA:

Nashik is the third largest district of Maharashtra having a total geographical area of 15530 sq. km. Physiographically, the district comprises of a part of a Deccan Plateau, one of the oldest originated blocks of the earth surface. The district may be broadly divided into three geographical regions, i.e. a) the downghat konkan tract; b) the Girna basin and c) the Godavari basin.

Girna-Mosam Basin is one of the most important river basin in Nashik district in Maharashtra and most prosperous in agriculture and land use aspect. River Girna is the Major tributary of River Tapti, whereas river Mosam is Girnas sub tributary. Growing population is one of the main factors for changing land use scenario and is main threat to the land in the basin. The population in the Girna-Mosam basin accounts for 37.54 percent of the Nashik district. The average density of population is 280 persons per square km. The Basin is having a total geographical area of 5829.43 square Km. It lies between 20° 15' 43" to 20° 53' 07" North latitude and 73° 40' 12" to 74° 56' 22" East longitudes. This basin may be broadly divided into four tehsil namely, Malegaon, Nandgaon, Satana, Kalwan and Deola.



Objectives-

The main objective of the paper is to study and suggest the proper utilization of water in the study area which is possible by intra-basin circulation of water from Par to Girna basin.

1. To highlight the problems and prospect of water scarcity in Girna basin.
2. To highlight wasteful discharge of Par River.
3. To assess the impact of inter and intra basin circulation of diverted water.
4. To suggest proper utilization of this excess water in Girna Valley basin .

DATA BASE AND METHODOLOGY:

This study is based on secondary data. The delineation of the Nashik district is attempted by marking out the watershed of river Par and Girna for which 46 H/11, 46H/15 Indian topographical maps published by Survey of India (S.O.I) were used. Digitization of toposheet No.46H/11 and 46H/15 (1:50,000) was done. With the help of software following processes likes as –Scanning, Georefrencing, Mosaic, Reprojection of the toposheet and creation of various layers was done. Preparation of Aspect map, slope map, DEM (Digital Elevation Model) and various layers like rivers, location of villages,

proposed dam were shown on the maps with help Arc GIS(10.0) software and www.asterdem.com web site was referred for the same.

Table-: 1 Basin -wise availability of water

Sr. No.	Basins	Available water for use (M.C.M.)	Expected Demand in 2030		
			Irrigation	Other Uses	Total
1.	Godavari	38882	46422	3546	49968
	Percentage	100%	120%	9%	129%
2.	Tapti	9324	8447	1841	10328
	Percentage	100%	91%	20%	111%

Table-2: Available Water Resources in Various River Basins in Maharashtra

Sr. No.	River Basin	Permission for utilize water resource(TMC)	Present Utilization (TMC)	Planned Projects (TMC)	Total Use (TMC)	Waste Water (TMC)
1	Narmada	11	nil	nil	Nil	11.00
2	Tapi	242	58.34	64.34	122.68	119.32
3	Godavari	1089	177.61	446.35	623.96	465.04
4	Krishna	594	239.74	283.96	523.70	70.30
5	Western Rivers	696	32.00	88.00	120.00	576.00
	Total	2632	507.69	882.65	1390.34	1241.66

Manjarpada:- A Proposed Model Project :-

Par rivers basin experiences water scarcity in summer, in contrast overflow discharge in rainy season. The undulating physiography restricts the local irrigation practices. In rainy season due to good rainfall, Kharif crops don't need water whereas in Rabbi & Non-rainy period, due to lack of storage, water is not made available. To utilize this wasteful running water for irrigation and drinking water, the demand to construct a dam near Manjarpada, Tal. Surgana (Nashik) has been made since a long time.

The catchment area of the project is hilly plateau with 14.75 km² (5.76 miles²) area cover. The water holding capacity with 50% probability is about 845 million cubic meters (MCM). The length at this earthen dam is 2070 mt & maximum height 56 mt. It's total storage capacity is 570 mcft, of which 26 mcft is dead stock (544 mcft = useable water). On sub channels meeting the main river a full capacity storage divert canal of 300 mt length joint canal will release water in the main dam, after which the full storage level will rise to 718 mts.

A) Inter Basin Circulation

In this project west flowing rivers (Nar-Par) will be diverted to the east in the Godavari basin. The planning commission has given authority to private sector for this project survey; seven dams are proposed to be constructed under this project, which will be connected to each other by tunnels and pipelines. 89.12 million cubic meter. water (M.C.M) is Proposed to be lifted and stored in Godavari Basin.

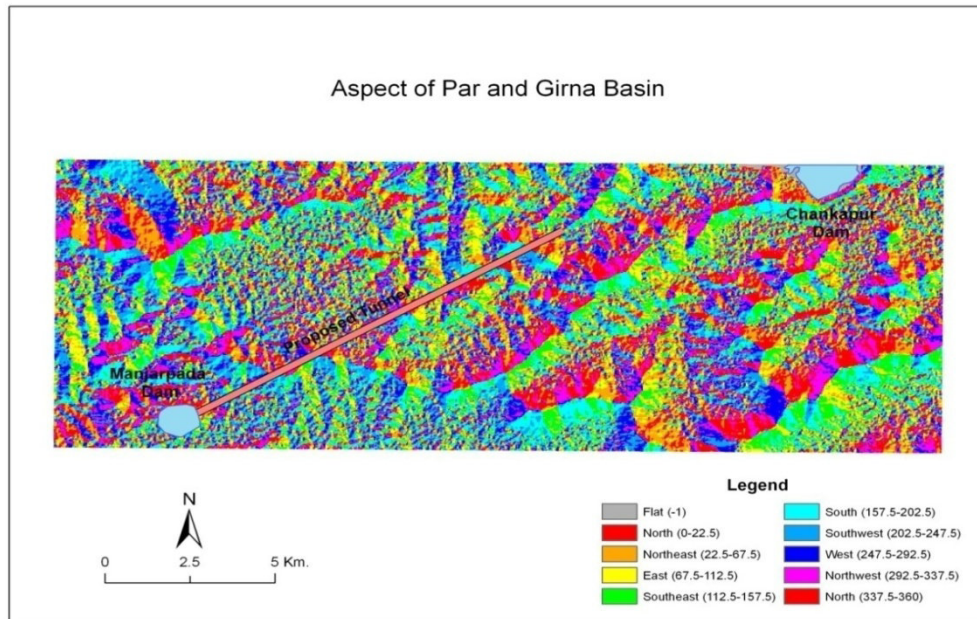
B) Intra Basin Circulation

From the proposed 7 dams to be constructed on Par Uplift Project No. 4, water will be made available by tunnels and pipelines in Girna Basin and can be circulated in already existing Right and Left Canals of the

Girna River. This additional water will rejuvenate the irrigated area initially which was under crisis of water scarcity. More over additional agricultural land can be brought under irrigation by Right and Left canals of Girna River.

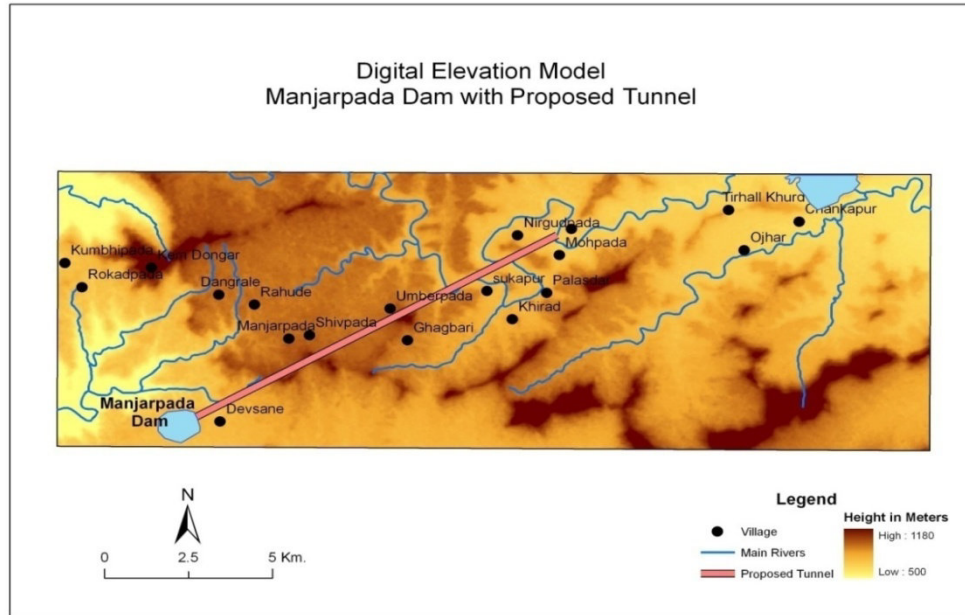
Rational of the Manjarpada Project:

In this project the water of Par River originating from Kame hills of Sahyadri is to be arrested at the foothills at 700 meter height from mean sea level (MSL). At 690.50 mt height from MSL near Haladbarda village diverted into Girna basin by tunnel. After fulfilling the local Irrigation demands of Surgana and Dindori Tahsils the remaining water can be diverted through a tunnel of 11.50 km. in Girna basin. Kharif crops will be benefited by flood water & Rabbi crops by stored water in Girna basin.



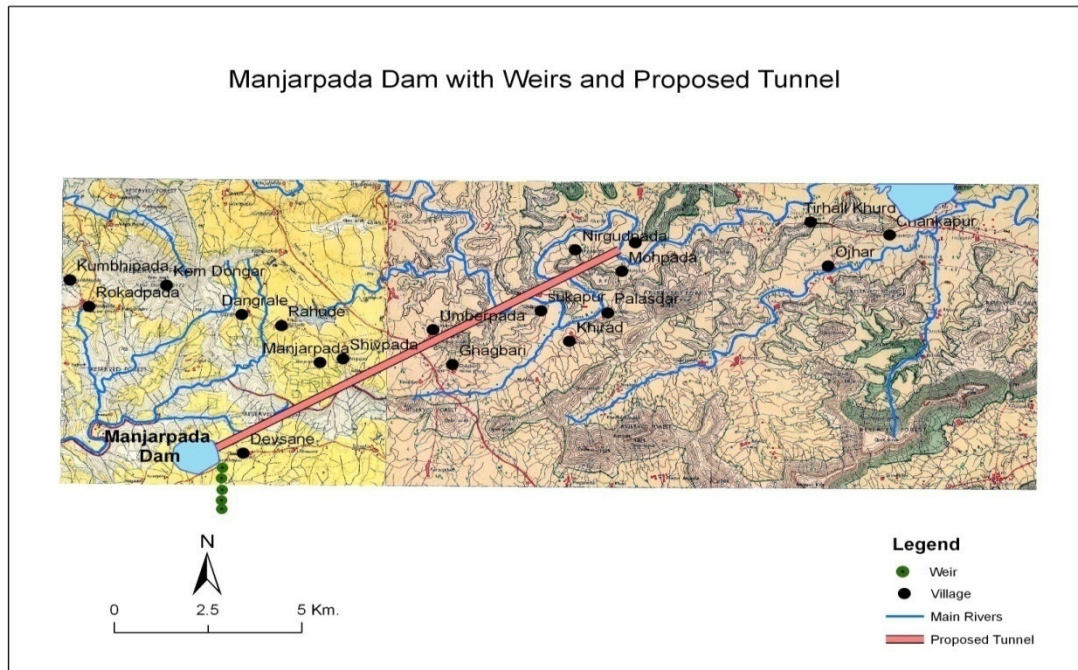
Benefits of the Project :

- The diverted water of Par river in Girna basin will boost its water quantity. Due to this water
1. The shrunk irrigated area due to left and right Girna Canals will be reformed.
 2. It will provide water to Girna Right canals in Rabbi season also.
 3. It will rejuvenate the small irrigation project at Dundhe & Ajang in Malegaon Tehsil and Increase Irrigated area in the Tehsil.
 4. In Kharif season, the flood water from left Girna canal, by lifting 10 to 25 mt, can be rejuvenated.
 5. To activate those small canal projects & Kolhapur type weirs (KT Weirs) which were not possible due to lack of water scarcity.
 6. Under Punad project, Chankapur extensive Right canals water can be provided to Kharif crops (Rameshwar to Zadi- Erandgaon).



Water utilization:

Planning of full utilization of water available at the project site is done. Of the available 845 MCM water wealth 78 MCM water will be made available in Par basin. Down stream at 5 Km distance 5 weirs will be constructed & water will be distributed by private lift Irrigation systems. Of the remaining 291 MCM water, in rainy season by a tunnel of 11.50 km length, will be released at the upper side of Chankapur dam in Girna river. 114 MCM water of Right Canal of Chankapur included under Punad project will irrigate initial 2445 ha kharif agricultural land. The remaining 57 MCM water by Left Girna canal will be lifted 10 to 50 mt & minor irrigated weirs at Dundhe & Ajang will be filled by 50% of their potential. These weirs are always dried due to lack of rainfall. One Minor Irrigation project each for Kalwan & Baglan tehsil are been proposed. 120 Million Cubic Feet (MCF) water in Kharif Season will be released in Girana River and will be used by Baglan & Kalwan tehsil by natural law. Of 544 MCF alive stock water stored in Manjarpada dam, 78 mcft water will be made available to local Dindori & Surgana talukas, remaining 454 mcft by tunnel will be made available in Chankapur dam (Girna basin). By this project combined in Kharif & Rabbi season total 9,233 ha area will be irrigated in Nashik district.



Formation of tunnel: - Water stored in Mahjarpada dam will be released into Chankapur dam by a tunnel of 11.50 mt lengths, the capacity of the tunnel flow is considered by flood over flow & diverted water in Kharif season flowing from it. In Kharif season 291 mcft water will be diverted which is considered to flow for 40 days. However the tunnel capacity is proposed to be for 20 days. The Initial base level of the tunnel is proposed to be 702 mt whereas end base level 690.50 mt.

Projects in Girna basin :-

Minor irrigation projects each at Kalwan & Baglan of 60 mcft water use are proposed to be constructed. On Girna river at down Stream of Thengoda weir at Chinchawad, Soygaon, Vasuol, Lohaner 180 mcft storage Kolhapur type weirs are proposed to be constructed.

Under punad project, Chankapur extensive Rt. Canal (from Rameshwar to Zadi Yerandgaon) will irrigate 2486 ha area in initial stage in Kharif season. This canal will work as a distributor. As under punad project this canal is flood canal there is no provision for distributors. By Girna Lt. Canal for Dundhe for Kharif season about at 25 mt & for Ajang tank at 10 mt height water will be lifted & both the tanks are proposed to be filled by 50% capacity. To make available Irrigation water in the Par basin for tribal population of Dindori & Surgana talukas 5 storage tanks are proposed to be constructed.

Financial Aspect and Talukas benefited

From primary budget Rs.7127 million are expected for the expedition of this project. Due to this project 9233 ha area will be irrigated with 850 mcft water available for drinking and industrial purpose. Dindori, Surgana tribal talukas as well as Deola, Malegaon, Baglan drought prone talukas will be also benefited by irrigated water. The beneficial ratio is 1.19. Cost value for the project worth Rs.75 corers will benefit tribal people of the talukas & drought prone areas.

SUGGESTIONS

Water plays a very important contribution in social and economic development. That is why water availability and its utility require coordination. Power stations can be raised on the water of western flowing rivers to pacify the urgent need of lifting water for irrigation and drinking water. A

minute survey has been done in this context. The Government should urgently pay its attention on this burning issue.

There are different opinions among the experts and beneficiaries regarding water lifting planning. Today to implement such projects is a need of time hence detailed survey of these projects is a must. There is a demand for the independent administrative body for this task. Independent association on western flowing basin is needed. As there is no water available in other basins. Western flowing water is the only ray of hope. Everybody is agreed on this opinion including Irrigation Commission, Water Expert, Committees appointed by Government. In this context Manjarpada, Naar-Paar projects are the only alternatives. The Government should create other alternatives before drought affected people if it is reluctant to implement these projects. For this scientific re-planning of Girana Dam should be done.

As this project is a divert water project, the Maharashtra Government has given urgent Sanction to it, only Central environmental Deptt. permission is pending to Manjarpada 1 and 2 projects which are boon for Manmad, Nandgaon, Yeola and Malegaon, Satana, Kalvan Talukas respectively. The project 1 work is in progress since last 5 year, 64.24 ha land near Devsane (Dindori) & Gogul (Surgana) a tribal majority population village has been reserved for these projects. If these projects will be completed the drought condition will be boosted for the said regions.

The project is on the margin of Dindori-Surgana talukas, The work of the project has been stopped by the local project affected farmers. The farmers are not paid for the land acquired; Cracks have been form to the houses due to drilling and blasting work of the project. Wells and tube wells have been dried. The farmers are demanding for the compensation of these losses. There is urgent need to fulfill the demands and work out for their rehabilitation.

Irrigation development of the basin is very slow. When we compared the population growth and irrigation development in the basin, there is big variation between population growth and irrigation. The expected population will be increased up to 50.94 percent and the expected development of irrigation will be only 6.28 percent. This statistical data shows big variation and will create food grain problem in the basin. The suggested projects only have the capacity to bring the irrigation, industrialization, drinking water problem solution in Girna-Mosam basin.

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